IN THE CLAIMS

1. (Currently Amended) A method for transcranial measurement of brain function, comprising the steps of:

preparing image data including images of a plurality of markers at positions on a head surface and a brain surface image; and

projecting the positions at the markers on the head surface which are positioned on a three-dimensional head image in the data onto positions on the brain surface, which are positions underlying the positions on the head surface, for determining three-dimensional coordinate positions of the projected points, thereby transforming head surface coordinates to brain surface coordinates,

wherein the step for projecting the positions on the head surface onto the positions on the brain surface is carried out by a minimum distance search method or a head surface/brain interior reference dotted line segment connecting method,

the minimum distance search method being a method in which equidistant spheres each having a different radius from an arbitrary point on the head surface in the three-dimensional head image are drawn, and contact points of the spheres and the brain surface are determined to obtain a minimum distance between the head surface and the brain surface expressed as a straight line, and

the head surface/brain interior reference dotted line segment connecting method being a method in which a straight line is drawn from an arbitrary point on the head surface in the three-dimensional head image to a reference point inside the brain surrounded by the head surface, and an intersection point of the straight line and the brain surface is determined as a projection point for the head surface point in question.

2. (Original) The method according to claim 1, further comprising a step for normalizing the brain surface coordinates obtained from a plurality of subjects onto a standard brain.

3 -5. (Canceled)

6. (Previously Presented) The method according to claim 1, wherein the respective markers are not actually set up at the head surface, but they are calculated from head figure information to be virtually set up.

7. (Previously Presented) The method according to claim 1,

previously determining projected positions on the brain surface underlying positions to be standard points as the markers on the head surface by the step for projecting the positions on the head surface onto the positions on the brain surface; and

further comprising a step of calculating coordinates of arbitrary points or a set of the points on the head surface from relative positions with respect to the standard points on the head surface for determining their projected points or a set of the points on the brain surface.

8. (Previously Presented) The method according to claim 1,

previously determining projected positions on the brain surface underlying positions to be standard points as the markers on the head surface by the step for projecting the positions on the head surface onto the positions on the brain surface;

further comprising steps of previously determining a probability distribution of the projected positions on the brain surface of the standard points from data of a plurality of subjects, and

determining brain surface coordinates obtained by projecting arbitrary points on the head surface onto the brain surface based on the standard points and their probability error information.

9. (Previously Presented) The method according to claim 1, further comprising a step of determining a distance distribution between the head surface and the brain surface from head surface coordinates and the brain surface coordinates determined by the step for projecting the positions on the head surface onto the positions on the brain surface.

10. (Previously Presented) A software program implemented on a computer for realizing the method according to claim 1.

11. (Currently Amended) A transcranial brain function measuring apparatus comprising:

a probe having an irradiation point for irradiating a radial ray or an electromagnetic wave from a head surface of a subject to a interior thereof and a detection point for detecting an interaction of the irradiated radial ray or electromagnetic wave and a brain on the head surface; and

a data processor for analyzing a condition of the brain based on a signal detected by the detection point of the probe,

wherein the data processor is provided with a coordinate transformation section for transforming head surface coordinates to brain surface coordinates with data obtained by projecting positions on the head surface onto respective positions on the brain surface, whereby a position on the head surface decided by the irradiation point and the detection point are transformed to the brain surface coordinates, and the analysis data based on the signal detected by the detection point is displayed on the transformed brain surface coordinates, and

wherein the data obtained by projecting positions on the head surface onto respective positions on the brain surface is obtained by a minimum distance search method or a head surface/brain interior reference dotted line segment connecting method,

the minimum distance search method being a method in which equidistant spheres each having a different radius from an arbitrary point on the head surface in the three-dimensional head image are drawn, and contact points of the spheres and the brain surface are determined to obtain a minimum distance between the head surface and the brain surface expressed as a straight line, and

the head surface/brain interior reference dotted line segment connecting method being a method in which a straight line is drawn from an arbitrary point on the head surface in the three-dimensional head image to a reference point inside the brain surrounded by the head surface, and an intersection point of the straight line and the brain surface is determined as a projection point for the head surface point in question.

12. (Original) The transcranial brain function measuring apparatus according to claim 11, wherein the transcranial brain function measuring apparatus is a light measuring apparatus; and the probe is provided with light delivery point(s) as the irradiation points for

emitting light and light reception point(s) as the detection points for receiving the light to be discharged to the outside after transmitting through and/or being reflected by the subject.

13. (Previously Presented) The transcranial brain function measuring apparatus according to claim 12, wherein the light measuring apparatus is a multi-channel light measuring apparatus in which a plurality of the light delivery points and a plurality of the light reception points are disposed on the head surface, respectively.

14. (Previously Presented) The transcranial brain function measuring apparatus according to claim 13, wherein the light emitted from the light delivery points to the subject is a light in a near-infrared region.

15. (Previously Presented) The transcranial brain function measuring apparatus according to claim 13, wherein the position on the head surface determined by the irradiation point and the detection point corresponds to the central position along a straight line connecting these two points to each other.

16. (Previously Presented) The transcranial brain function measuring apparatus according to claim 11,

wherein a distance between the irradiation point and the detection point is decided in such that a detection sensitivity at the detection point as a result of an interaction of the electromagnetic wave or the radial ray from the irradiation point and the brain on the surface thereof becomes the maximum on the basis of the distance distribution between the head surface and the brain surface determined in claim 9.

17. (Previously Presented) The method according to claim 1,

wherein the image data is that obtained by simultaneously taking images of a plurality of markers set up at positions on the head surface and the brain surface image.